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THE FINWHALE FISHERY OFF THE LAPLAND COAST IN 1888.

BY ALFRED HENEAGE COCKS, M.A., F.Z.S.

THE total take in 1888 again shows a considerable diminution from the preceding season. My friend Capt. G. Sörensen (Harbourmaster of Vardö), for the first time, has apparently forgotten to send me a list of the whales killed,* so that my returns for the Finwhaling during 1888 are more imperfect than usual; as, besides gaps, my information concerning a few of the companies may not include the last whale or two killed at the extreme end of the season. If, however, we allow (to make even numbers) 13 beyond the numbers recorded at the end of this paper, the total only amounts to about 730, or probably from 120 to 130 less than the total obtained in 1887, which in its turn was 100 less than the total in 1886.

The number of Companies (in spite of a few changes) remains the same as in 1887; the number of whalers was greater by three, or—as I am not sure that two of the vessels were in commission before the latter part of the season—the increase is perhaps more correctly stated as *one*.

The falling off in the numbers of each of the three species of Rorqual appears, as far as my returns go, to have been about

* As it takes a month to receive a reply from Vardö, I did not write a reminder to Capt. Sörensen, because I could not tell but what the next post might bring me the desired information.



proportionate, while the only apparent increase is in Humpbacks, a tolerably sure sign of the scarcity of the two larger species.

The numbers obtained by two Companies may be specially noted:—Yeretiki, the easternmost of the whaling stations, 23 whales, against 60 in the previous year, the principal falling off being in Common Rorquals: and Sörvær, in West Finmarken, no Blue Whales, against 17 in previous season; Common Rorquals *increased* by nearly five times; the unprecedented catch of 110 Rudolphi's Rorquals in 1887, was last season reduced to the yet extraordinary number of 60; and Humpbacks 11, against 4 in 1887.

The chief point of interest about the season's operations was the killing of a Blue Whale off Vardö, early in July, which had one side considerably enlarged, and whose vertebral column was said to be distorted. There was no external mark to explain the circumstance. After it had been flensed the "krang" was sold to one of the guano factories, where, on cutting into the enlarged side, there ensued considerable effusion of blood and matter, followed by the finding, between two of the ribs, a small harpoon, or "bomb-lance." The point of interest consists in the fact that this is undoubtedly of American manufacture, and that the whale must have received this unpleasant guest somewhere on the American side of the Atlantic, and subsequently crossed the ocean. The lance is $16\frac{1}{2}$ (English) in. long, and $\frac{7}{8}$ in. diameter, and bears the inscription engraved, "E. PIERCE'S PAT. JUNE 1, 69."* It unscrews into three main sections and four interior smaller pieces. Capt. Sörensen, in whose custody it was at the time of my visit to Vardö, kindly allowed me to photograph it, and I sent a copy to Prof. F. W. True, of the U.S. National Museum, Washington, asking him to be so good as to give me any information in his power as to place of manufacture, and in what whaling trade such pattern was used. Prof. True has very kindly taken considerable trouble about it, and has furnished me with the following particulars, in a letter dated May 24th:—

"Soon after receiving your letter, I wrote to Mr. Eben Pierce regarding the harpoon, and obtained from him some very interesting papers, copies of which I enclose.

"The harpoon is of the kind which in America is called a bomb-

* The figures looked like C D, but no doubt represent the date as above.

lance. We have one of exactly this pattern in the Museum. The wires which are to be seen in the left end of the shaft are not part of an electrical apparatus,* but belong to the guiding-wings, which are wanting in the specimen photographed. I enclose a copy of some notes on the construction of this bomb, contained in the late Mr. J. T. Brown's 'London Fisheries Exhibition Catalogue,' a copy of which you may not have at hand.

"Mr. Pierce's statement that he has never sold any of these bombs to the Norwegian whalers is, it seems to me, of much importance. The Scotch whalers, if I have properly understood your reports on the whale fishery, do not chase the Finback Whales, while, on the other hand, our Provincetown whalers *do* capture them, and use these explosive bombs for the purpose. It is possible, therefore, that the individual from which the Pierce bomb was taken was shot at by one of our whalers, and afterwards crossed the Atlantic to the coast of Finmarken.

"We do not yet know very much about the Finback Whales that frequent our Atlantic coast, and I have been intending for some time to visit the stations in Massachusetts, with a view of gathering some new information regarding them."

The extract enclosed from the 'London Fisheries Exhibition Catalogue' is as follows:—

"U.S. of America.—E. 'The Whale Fishery and its Appliances.' By James Temple Brown. Washington, 1883, p. 59."

"PIERCE'S BOMB-LANCE.—Main portion, or powder chamber, brass tubing; anterior end provided with nipple for percussion-cap and time-fuse. Rear end, or tail-piece, composition metal; fluted sides, with longitudinal slots for reception of the wings. Guide-wings, sheet brass, fastened to brass wires; closed by a brass ring when placed in the gun, and expand radially from a common centre when discharged. Lance-point, composition metal; four cutting edges; recessed, containing a hammer secured by a wooden pin, which is broken by the concussion of the explosion of the charge, and explodes the cap on the nipple in the end of the shank, communicating the fire to the magazine by means of the time-fuse. Button, sole leather, fastened with a screw. Length, 19 inches.† New Bedford, Massachusetts, 1882. 56355. Manufactured and presented by Captain Eben Pierce. Used

* As we in Vardö had conjectured.

† The difference in the length of the Vardö example is probably to be accounted for by the absence of the "guide-wings." Possibly also the 1882 pattern may vary from that of 1869.

with Pierce & Eggers' Shoulder-gun. Made in three sections. The lance is loaded by detaching the rear section, and capped by detaching the cutting-point."

It is only necessary to give brief extracts from the papers referred to as received by Prof. True:—

Capt. Eben Pierce, in a letter dated New Bedford, Feb. 28, 1889, says, "In reply to yours about bomb-lances I would say I have never sold any lances to the Norwegians. I have sold them to the Scotch whalers." As the name Blue Whale leaves the identity of the whale in doubt, I will mention that although I did not see the individual, yet the name Blue Whale in Norwegian (I believe I was the first to adopt it in English) always signifies *Balenoptera Sibbaldii*. The present instance proving that this species also occurs on the American side, it is probably identical with either the *Sibbaldius tuberosus* or *tectirostris* of Cope.

The bomb is considered to be one of the first manufactured by Capt. Eben Pierce, of New Bedford (Massachusetts), and he has some of this patent still on hand. "He is still engaged in their manufacture, but on an improved plan, and are those mostly used in the Arctic by American whalers." "Sometimes some careless persons fire these bombs into the whale without being loaded, and in this case they do not explode, but remain in the whale for years in their perfect state. This bomb never contained poison, but simply powder."

Capt. Berg, of Syltefjord, and Capt. Hoff, of Jarfjord, send the following notes of foetuses found during the last season, the observations of each being distinguished by the letters (B) and (H):—

				Norw.		
				ft.	in.	
Common Rorqual,	May 19	...	...	4	0	(B)
"	June 2	...	...	4	5	"
"	July 16	...	...	8	1	"
"	" 20	...	...	3	0	"
"	" 28	...	...	4	6	(H)
"	Aug. 4	...	...	5	4	(B)
"	" 20 ; probably between 5 and 6 feet, but quite decomposed, as the whale had been killed five days when flensed.					(H)
Rudolphi's Rorqual,	July 26	...	...	8	1	(B)
"	Aug. 6	...	...	3	6	(H)
"	" 15	...	...	8	8	(B)

Two foetuses of the latter species were found at Pasvig on August 10th, one measuring 6 ft. and the other about 5 ft.

Capt. Sörensen (now Harbour-master of Vardö) believes that Common Rorquals pair in December or January, and generalises to the effect that foetuses of this species are from 6 to 12 inches in April, and from 6 to 10 feet in August, and are from 16 to 20 ft. long at birth. He is also of opinion that Blue Whales have no fixed time for pairing, as foetuses may be found at the same date of from 1 to 20 feet in length.

There seems little doubt that whalers do not as a rule lose much through not coming earlier to the fishing quarters, as the only report I have of whales seen on the passage north is from Capt. Hoff, who reports, "On the 16th March a pair of Humpbacks seen half a (sea ?) mile from land, outside Gamvig-Mehavn, and no whale seen besides them on the passage north from the 6th to 17th March." But he goes on to say, "A quantity of Common Rorquals and Humpbacks seem to have been under the land about Vardö, and on the Murman coast, in the month of February."

"Did not see whales congregated in any large numbers. Rudolphi's Rorquals, up to fifty together, were observed forty English miles north of Tanahorn on 24th July, and sixty English miles N.N.W. of Nordkyn on 20th August."

"The whales have this year remained constantly far out at sea, especially between twenty-five and sixty English miles from land, as the fishing, so far as the East Finmarken vessels were concerned, has been constantly outside the Nordkyn, and the North Cape; and only of short duration, and occasionally, to the eastward of Tana. Common Rorquals were scarcely obtained to the eastward of Vardö, and only a few Blue Whales to the eastward by Norwegian boats. The season has been uncommonly stormy right throughout until the second half of July, but, on the contrary, calm and beautiful weather the greater part of August."

Capt. Berg (Syltefjord) writes, "The months of April and part of May were unusually cold in Finmarken this year, the temperature of the sea being especially very low, to which we attributed the poor "Loddefiske" (= Capelan* fishery), and also

* *Mallotus arcticus*.

that the whales kept so far out to sea, generally about twenty to forty miles off shore; and the weather being also very unsettled at the time, the whalers had a very poor chance. We caught only four whales in April, two in May, and three in June: there was no great quantity of them all these months between the North Cape and the Murman coast. About the middle of July I first observed any shoal of whales—between Tana and Baadsfjord, thirty miles off shore; and here Blue Whales, Common Rorquals, and Humpbacks were represented. We caught eight whales between the 15th and the 22nd of that month. During the first days of August there were also several whales of these different species off the Nordkyn. After the 20th of August very few whales were seen; on my last cruise (August 27th and 28th), between the North Cape and Vardö, I only saw three stragglers (Common Rorquals), about forty miles north of Nordkyn. We left our station at Syltefjord on the 30th of August, having stayed there since the 21st of March.”

Capt. M. C. Bull (of Sörvær, on Söröen, West Finmarken), writes:—“Blue Whale: very few examples seen, none obtained. Common Rorqual: there were several at the end of May, seven to eight (? sea) miles off Söröen, and thus by the 5th of June we had obtained thirty. Rudolphi's Rorqual: were under the coast in July, but not in such large numbers as in 1887. The weather in 1888 was unusually stormy, with high seas. For ten days from St. Hans' Day (= 24th June) we had so heavy a gale that the vessels had to lie in harbour. The weather was unusually cold. The temperature of the water so low that the Capelan, which usually come under land at the end of March and April, died in consequence; so we from our whalers observed thousands upon thousands of barrels of dead Capelan outside Söröen, right up to North Cape. The cod fishery was thus pursued first in May; but a small quantity was caught, as the fishermen went home early. The fishermen believed that the reason why the Capelan died was that the water was so foul from the whaling factories that the fish could not live in it. They were ignorant that the temperature of the water could have any influence on the fish.”

The fishermen always maintain that the whales (or at least one or more species of them) pursue the shoals of Capelan, and, swimming round them, force them into compact masses and

gradually drive them close in shore. The Cod likewise, wishing to prey upon the Capelan, follow the driven masses towards the shore, and so come within reach of the fishermen. They are fully persuaded that if the whales are in turn harried at this time, they will shift far out to sea, and the Capelan being no longer frightened towards the coast by their gigantic pursuers, the cod fishery will fall off, and that it has even already begun to do so.

All this the whalers deny *in toto*, and, so far as I can judge, with reason: for even allowing that the shoals are rounded up by whales, to afford them a more complete mouthful, is it likely that the survivors will rush away for miles towards the land because they have been alarmed by the apparition of the gigantic jaws of a Rorqual? Is it not rather in the nature of such small fish to be content with a flight at best speed of a few yards, or, as we are speaking of the open sea, of a few fathoms?

However, this question—so constantly brought forward by the fishermen—was considered of such serious consequence (considering the enormous value to the country which the cod fishing represents) that Prof. G. O. Sars, of Christiania University, went up to Finmarken last summer to investigate the matter at first hand; and there I had the pleasure of making his acquaintance. Capt. Bull has kindly sent me a copy of his 'Report to the Department for the Interior, from Prof. Dr. G. O. Sars, on the practical scientific investigations set on foot by him in the summer of 1888, concerning the sea-fisheries, also concerning the close season for whales in Finmarken. Christiania, 1888.'

As it is impossible to quote his arguments *in extenso*, I will merely say that he acquits the whaling of any damage to the fisheries, a conclusion in which I fancy most people (except the fishermen) will agree with him.

On the passage out from England across the North Sea, on August 3rd, when 140 miles N.E. $\frac{1}{2}$ N. (magnetic) from the Spurn, saw at least three whales heading about S.S.E., which were probably feeding. I could not identify them with certainty, but believed them to be Rudolphi's Rorquals. From their dark colour the choice lay between this species and Humpbacks. Directly afterwards saw two (at least) Common Rorquals (almost certainly) heading about S. by W., so as almost

to meet the others. These last were travelling, and not feeding.

On the afternoon of the 5th, a little to the north of Molde (off Ulsunet), saw four Ospreys; and on the 8th, at Vol Sund Tarn (the entrance to Namsen Fjord, twenty English miles S. of Namsos), saw an Osprey fishing for Coalfish, in company with a number of Lesser Black-back, Herring, and Common Gulls. Also a Killer, *Orca gladiator*, and what was probably a Lesser Rorqual; and my friend Mr. Henry Balfour, who was with me, thought he saw a third smaller Cetacean (if so, probably a Dolphin).

On the evening of the 9th, at the mouth of Salten Fjord, passed a school of mixed Cetaceans, chiefly Dolphins, and among them one (or more) that we took to be Pilot Whales, *Globicephalus melas*, and probably a Lesser Rorqual.

Prof. Collett having (as mentioned in 'The Zoologist' for 1888, p. 106) called my attention to the species of Dolphin commonly met with along the Norwegian coast, I was especially glad to find last year two newly-stuffed specimens of *Delphinus albirostris* in the Thronhjelm Museum; for one may see a Cetacean over and over again at sea, and obtain near and comparatively clear views of it, but, unless one has also the opportunity of examining specimens on shore, one's ideas of it are tolerably certain to remain somewhat hazy.

By the opportunities above mentioned, and especially on the following day (the 10th), between Kjeö and Lödingen, between Græsholmen and Harstad, and near Havnvig, we had unusually good views, including plenty of jumping, and we quite satisfied ourselves that in each case where we could see clearly, the Dolphins were *D. albirostris*, and all apparently were the same species.

At Bugten (Capt. Grön's), in Busse Sund, was lying the krang of a Killer (no doubt *Orca gladiator*) which had been taken by one of his whalers. Total length, 22 ft. 2 in. Fin said to have been barely 1 foot high. Nose to parietal ridge, 3 ft. 3 in. Breadth of nasal bones (1 inch behind last tooth in upper jaw, and immediately in front of orbital process), 1 ft. 2½ in. Greatest width of skull (zygomatic arches), about 2 ft. 6 in. Length of flipper, about 3 ft. 1 in.; breadth of ditto, 1 ft. 7½ in. Span of flukes, 5 ft. 5½ in. (probably rather more when

fresh). Notch between flukes fully $2\frac{1}{2}$ in. deep. Width of flukes, at eight inches from central line of vertebral column, 1 ft. 7 in.

Capt. I. Bryde told me that on one occasion (two or three years ago), when towing a Blue Whale to his factory in Busse Sund, he fell in with a small school of these marine wolves, and by the time he reached the sound they had pretty well stripped the blubber, and even the flesh, off the whale.

The last live whales that I saw were three Blue Whales going south into Varanger Fjord, about opposite Ekkerö, on August 20th.

The dead whales included several Common Rorquals, of one of which I took the following notes at Evensen's Factory at Vardö, on August 21st :—

Male, 71 English feet long. Left upper and lower lip jet-black. Right lips enamel- or milk-white. The colour of the inside of the lower jaw on each side, the contrary to the outside. The right side was already flensed, but the white certainly extended much further round to the side than on the left side. Black above. Whole under side, except left side of chin and last twelve feet of tail, white; the black on the keel being grey-black, and shading off somewhat gradually. The small, or tail about one foot from flukes, only measured about fifteen or sixteen inches transversely. The ridges on the under side white, the furrows nearly all black.

On the 20th passed Capt. Hoff on the Hvalen, in Varanger Fjord, towing a very light-coloured Common Rorqual and a small black-bellied Humpback. Another Humpback (a male) on the same day, in Busse Sund (Capt. Grön's), was white-bellied, and nearly the whole of outside of flipper was white; a patch of black, about a foot wide, near the middle of the under side. A female Rudolphi's Rorqual, also lying there, was blue on the under side, with hardly any white.

In the list on the next page the changes in Companies, &c., are marked by *italics*.

LIST OF WHALES KILLED, 1888.

COMPANY.	MANAGER.	PORT OF REGISTER.	WHALEERS.	BLUE WHALES.	COMMON HORQUALS.	RUDOLPH'S HORQUALS.	HUMPBACKS.	TOTAL.	WHALEERS.
<i>Murmanski Coast:</i> — Yeretiki	P. A. Horn ...	Petersburg...	2	11	c. 6	—	c. 6	23	Welda, Murmanetz.
<i>East Finnmarken:</i> — Stokke, Pasvig	A. Ellevsen ...	Tönsberg ...	2	12	27	3	2	44	Pasvig, Varanger.
Jarfjord	Hoff	Do.	2	2	22	5	4	33	Hvalen, Jarfjord.
Do., Madvig	Foden	Do. ?	1	3				? c. 20	Fridthjof, Ellida.
Busse Sund—Christiania Co.	Ch. Castberg...	Christiania...	2	3				23	Alfa, Beta.
Do., Laurvig Co.	A. Bernitsen ...	Laurvig	2	6	29	6	1	42	Fiskeren, Nimrod.
Do., "Thekla"	I. Bryde	Sandefjord...	1	7	14	—	2	23	Thekla.
Do., Bugten	A. Grøn.....	Do.	3	10	25	7	11	53	Skjöld, Værg, Tanahorn.
Do., "Falken"	Chr. Sorensen	Do.	1	4	5	2	—	11	Falken.
Do., "Haabet"	Evensen	Do.	1	4	9	2	1	16	Emma.
Do., Skjærsmæs	H. Ellevsen ...	Tönsberg ...	2	2	25	2	—	29	Nora, Othar.
Syltefjord, Dahl's Exors. ...	L. Berg	Do.	1	3	16	2	4	25	Victoria.
Do., Bergen Co.	M. A. Selliken	Bergen	1	1	2	—	—	3	Cornelius.
Baadsfjord	O. B. Sørensen	Arendal	2	—	3	—	—	3	Neptun, Jupiter.*
Do. ..	C. Bruun	Tönsberg ...	1	—		—	—	7	Emanuel.
Mehavn	S. Foyn.....	Do.	2	6		3		36	Gratia, Arctic,
<i>West Finnmarken:</i> — Bøle, on Söröen.....	Do.....	Do.	2	—				c. 86	Providentia, Spes-fides.
Sörvär, do.....	M. C. Bull.....	Do.	2	—	47	60	11	118	Bin, Frey.
Tufjord	T. H. Andresen	Do.	2	1				56	Nordkap, Nordkyn.
Skaarö	J. Gjæver	Tromsö	3					66	Duncan Grey, Nidaros,
			35					717	Nancy (=late Kiberg*).

* I am not sure that she was in commission the whole season.

THE BEARDED TITMOUSE.

BY J. H. GURNEY, JUN., F.Z.S.

THE Bearded Titmouse, *Panurus biarmicus* (Linn.), was first discovered by Sir Thomas Browne, the learned physician of Norwich, in Charles the Second's time, but not until after he had written his 'Account of Norfolk Birds,' in which no mention of it occurs. Subsequently, in a communication to John Ray, he described it from an example which had been shot in an osier-car, probably on the Norwich river. Norfolk is now its last home, including the north of Suffolk, and these are the only two counties in which it still breeds, the Broad district, where alone it may be found, extending over an area of little more than twenty miles.

So scarce, however, has this bird become that I am sorry to say I have been on Norfolk Broads scores of times without seeing one, and this is the experience also of others besides myself. The marshmen would have strangers believe that this scarcity is owing to hard winters, but their own cupidity is really the chief cause of the decrease, for they know full well the market value of the eggs. The truth is, as Messrs. Lubbock, Stevenson, and Booth have pointed out, the Bearded Tit is a much hardier bird than its frail appearance would lead one to expect.

At Hickling Broad there is not one where ten years ago there used to be twenty. Joshua Nudd, a weighty authority in such matters, estimated the number this year (1889) on Hickling Broad and Heigham Sounds at two pairs, and four pairs on Horsey Broad adjoining, a sad contrast to the time when they were so plentiful that in one morning's search he could find forty fresh eggs; but then Nudd could not resist taking them, thus practically killing the geese which laid these golden eggs. For years there has been a trade in them, the recognised price being fourpence apiece, and this is enough to tempt a Norfolk marshman to leave his legitimate occupation of mowing sedge at 10s. a week and take to "egging."

There is a partial remedy for this state of things, though there are some objections to it: if the proprietors of the Broads would allow the reeds to grow instead of cutting them, we should

have high and thick covert which would be an asylum that would defy the dealers, and where many a nest would escape detection. Reeds are worth £6 a load, but the expenses of cutting them are considerable, and there is much less thatching now in Norfolk with reeds than used formerly to be the case.

Since the drainage of Salthouse Broad the Bearded Tit has ceased to nest anywhere on the Norfolk coast, and it is possible that the examples obtained of recent years at Cley by Dr. Power, and at Burnham by Mr. Richford, and by others at Blakeney and Morston, were migrants which had crossed the German Ocean. Lord Leicester informs me that within his recollection they used to breed at Holkham, adjoining Burnham, but they have long ceased to do so. I am sure examples may still be met with occasionally by the coast if sought for, but there will never be sufficient numbers to compensate for the losses sustained on our inland waters.

In regard to habits, I must confess that, notwithstanding a somewhat extensive acquaintance with this beautiful little bird, I am able to add but little to what has been already written about it. On looking over my entries of the dates of nesting I quite agree with the late Mr. Stevenson that this bird is an early breeder. I once saw young ones as big as their parents in the middle of June, and at the same time an incomplete clutch of fresh eggs, which makes me think they may sometimes breed three times in a season, the first clutch being generally hatched in April. But, to prevent misconception, I should observe that the dates referred to are dates of nests *found*, not *taken*, for I have never taken one myself, nor have I ever shot a bird.

A more beautiful object than a male Bearded Tit clinging to a reed-stem it is difficult to imagine. Except in the vicinity of their nests they are decidedly shy; it is only then, as a rule, that they flit across open spaces, and sometimes unfortunately, in their anxiety for their eggs, they betray their whereabouts. They are very unsuspecting when they have young, going straight to the nest in the presence of spectators, but having instinct enough to approach by creeping instead of flying; and a similar habit has been observed in the Coal Titmouse. I have been surprised sometimes, when walking with Joshua Nudd, to notice how often he heard the note when neither of us could see the bird; long experience in looking for them had sharpened his

ear. If there is any wind they do not show themselves; a very little is enough to wave the tops of the reeds and keep them at the bottom; it is also difficult to hear their notes unless it be a still day, for they are not loud at any time, although described by many persons as shrill. One who has kept them in confinement syllables the ordinary call-note thus: "tjunk, kjunk, tjink, tjink." Another circumstance which renders them difficult to see is their protective tawny colour, so like the old brown reeds of the preceding year. Their long tails have earned them the local appellation of "Reed Pheasant," another local name being "Maish [*i. e.*, Marsh] Pheasant." Occasionally the natives of Hickling and the neighbourhood allude to them as "Maish Tits," but I do not attach much importance to local names, except in particular cases.

The flight of the Bearded Tit may be described as somewhat laboured and slow; it flits rather than flies, and never seems to rise into the air. The head is held high, and the tail, which certainly must incommode the bird, has the appearance of being partly spread. There is nothing in this to distinguish these birds from our woodland Titmice, from which they are by no means so dissimilar as some writers would have us believe.

The Rev. Richard Lubbock has remarked that in cold weather they sometimes nestle closely together upon the same reed, in the same manner as does the Long-tailed Titmouse; and a fenman brought him as many as six, which had been killed at one shot just before dark, when they were thus huddled together ('Fauna of Norfolk,' 2nd ed. p. 56).

The nest is generally placed about a foot above the level ground, and never in any way suspended, the tallest and oldest reeds being generally selected for its support, but a nest may occasionally be found in a cluster of sweet gale (*Myrica gale*), *Carex*, and alder. The nest is made of the brown leaves of *Arundo phragmitis*, and always lined with its feathery top; I think I have seen sweet gale interwoven in the fabric also. The inside diameter is about 2·8 in., and the eggs are not incommoded by a bit of reed sticking through the bottom. Yarrell alludes (vol. i. p. 516) to the nest being placed in a tuft of grass or nettles, but nettles do not grow on our Broad, and a tuft of grass, unless it was very rank marsh-grass, is not a likely place in which to find a nest. No one can think

Yarrell's woodcut of either nest or bird very good; the bird is depicted with a double moustache, and the head erroneously appears to be of the same colour as the back. The outline, however, is good, and I have somewhere read that it was sketched from life by the late Mr. Blyth.

The eggs are generally six in number, though I have found seven, white, with irregular specks and short wavy lines of brown, with a pink or golden tinge about them when perfectly fresh, but showing a dark zone when incubated, owing to the shell becoming opaque. Joshua Nudd once found two nests on the Broads, one on the top of the other, each containing seven eggs. On another occasion he found twelve eggs in a nest, but in this case two birds claimed ownership, as he suspected, from seeing two hens close to the nest. I have seen the cock bird fly off the nest, though the fact of its taking any part in incubation is doubted by a good authority.

The plumage is almost too well known to ornithologists to require description. All the hen birds which have passed through my hands have had some trace of the black markings on the back, but Messrs. Sharpe and Dresser state ('Birds of Europe,' vol. iii., p. 60) that it is ultimately lost. One partly in male plumage, and with a trace of the black moustache, lived and laid eggs in the aviary of Mr. Keulemans, and it is just possible that some such specimen may have suggested the remarks of the authors just mentioned. For a long time after quitting the nest the young have black backs, and this is visible a long way off when flying; the back is also quite black when they are in the nest, the immature plumage in this respect being very distinct from that of the adult.*

The nestling when just hatched is blind, and even when only one day old has a brilliantly coloured mouth, which brilliancy consists of four rows of black and white spots raised on the surface of the palate, which is red. How long the young present this remarkable appearance I do not know, but it is not lost until after they have left the nest.

* In this plumage the young bird looks so different to the adult that it was once regarded by Bonaparte as specifically distinct, and described by him as *Calamophilus sibiricus* ('Comptes Rendus,' 1856, p. 414).—ED.

NOTES ON THE REPTILES OF BARBADOS.

BY COLONEL H. W. FEILDEN.

THE island of Barbados emerges from the Atlantic Ocean, some hundred miles to the eastward of the chain of the Lesser Antilles, being separated from the islands of St. Lucia and St. Vincent, its nearest neighbours, by an oceanic depression of not less than a thousand fathoms; to the southward, between Barbados and the continent of South America, similar depths are found, whilst to the eastward it rapidly descends into the profound abyss of the Atlantic. Geologically speaking, Barbados is a true oceanic island in the sense that it has not been connected with a continental area since the introduction of its present flora and fauna. A remarkable feature in the formation of Barbados is that no volcanic rock, so far as I am aware, protrudes through the basement series, which consist of sedimentary rocks, which are supposed to be either late Eocene or Miocene. Their exact age has not been satisfactorily determined, but they will in all probability be found to correlate with the rocks of Trinidad and the South American continent. Resting unconformably on these rocks are deep beds of true oceanic ooze, similar, we may suppose, to those which cover the floor of the Caribbean and Atlantic areas, and on these oceanic oozes the coral covering of the modern island of Barbados has been built. It is therefore impossible to escape from the conclusion that the older Eocene or Miocene rocks, which now form the basement series of the island, must have participated in the prodigious downthrow of the Caribbean area, to a depth of at least 1000 fathoms, in order to bring the floor of the ocean into harmony with its present depths. By no other train of reasoning can we account for the vast accumulations of oceanic ooze now resting on the oldest rocks of Barbados. When the process of upheaval which brought the modern island of Barbados into existence was sufficiently advanced, the reef-forming *Zoantharia* commenced building the coral-reefs, which, in the shape of coralline limestone, now forms a capping over six-sevenths of the island, down to the sea-level, beyond which the same process of reef-building is still proceeding. The only portion of the island not covered by coralline limestone is the north-east

section (Scotland District), where the coral-capping has been removed by subaërial denudation. The elevation of Barbados from the ocean, though intermittent, as shown by the numerous lines of old sea margins, rising one above the other, appears to have been progressive since the time when the structure of the coral polypes first emerged, and which at its highest point now stand at an elevation of over 1000 feet above present sea-level. If this outline of the geological structure of the island of Barbados be correct, its fauna ought to bear out the conclusions arrived at.

An examination of the Reptiles inhabiting the island of Barbados points to their recent introduction. They are by no means numerous, consisting, so far as I have discovered, of one species of Snake, four species of Lizards, a single species of Toad, and a Tree-frog. The Snake, *Liophis perfuscus*, Cope (P. Ac. Phil. 1862, p. 77), is the only puzzle, for, so far as we at present know, the species is restricted to Barbados, and the transport of a Snake by natural causes over a wide expanse of ocean offers considerable difficulties. The introduction and restriction of the venomous Fer-de-lance, *Craspedocephalus lanceolatus*, to the islands of Martinique and St. Lucia, its original habitat being, I understand, the South American continent, is equally remarkable. Two hundred and thirty years ago, when Ligon wrote his history of Barbados, *Liophis perfuscus* appears to have been extremely numerous, and though innocuous, very troublesome to the settlers; from its habit of crawling up through the windows of the dairies and drinking the milk, he mentions how they were obliged to build their milk-houses with projecting ridges to keep out these unwelcome intruders. At the present day, owing to the high state of cultivation, little harbour is left for Snakes, and in a space of twelve months I only succeeded in obtaining two adult specimens and two young. The introduction and great increase of the Mongoose must have assisted in the destruction of the Snake, and it may be predicted that before many years have elapsed, the species will be extirpated from the island. The young are almost black in colour, and very different to the adult, and hence has arisen the belief which I have heard in Barbados that two species of Snakes inhabited the island.

Of the four species of Lizards found in Barbados, the Gecko, or "Wood-slave," *Hemidactylus mabuia*, Mor., has an almost

world-wide distribution in the tropics, and its occurrence in Barbados may be easily accounted for; as it is known to be transported in ships. *Mabuia agilis*, local name "Scorpion," is rather rare in Barbados; it chiefly affects damp and rushy situations. I procured it from Graeme Hall Swamp and Chancery Lane; it occurs over the greater part of Tropical America, and its transport either by the agency of man, or by individuals, or eggs, on floating trees from the South American continent may be readily conceived. *Anolis alligator*, the pretty little Common Green Lizard of Barbados, is special to the Lesser Antilles. Naturalists have subdivided it into almost as many species or varieties as the islands it inhabits; lately Mr. S. Garman, an American naturalist, has given the Barbados form the specific name of *Anolis extremus* (Bull. Essex Inst. vol. xix. 1887). It must be remembered that no animals appear to have a greater aptitude, when cut off from the parent stock, in assuming specific variations than Lizards. The introduction of *Anolis alligator* into Barbados would probably be concurrent with the advent, from some other island of the Lesser Antilles, of the prehistoric men who first grounded their canoes on its shores, for this Lizard may be often seen sunning itself on boats hauled up on the beach, and individuals often take an involuntary cruise in the fishing-boats. *Centropyx intermedius*, Gray, the largest and handsomest Lizard in Barbados, where it is known by the name of "Guana," probably a corruption of Iguana, and not, as I have heard in Barbados, from its having been introduced by the guano-laden ships, has likewise received specific rank at the hand of Mr. Garman as *Centropyx copii*. Whether the difference between the Barbados form and the South American race is sufficiently distinct to entitle it to specific rank I would not venture to determine, but Mr. G. A. Boulenger, who has examined the specimens I brought from Barbados, informs me that there is not the slightest difference between them and the typical specimens of *Centropyx intermedius*, Gray. It is very remarkable, as I am likewise informed by Mr. Boulenger, that the large series of *Centropyx intermedius* in the British Museum from South America consists only of females, and the specimens I brought from Barbados are of the same sex. Apparently the male is undescribed, and I take this opportunity of suggesting to some of my kind friends in Barbados that a series of males, preserved

in strong spirits, would be an acceptable donation to our National Institution. The species is quite common at Chancery Lane, though I was informed that the Mongoose had taken to devouring it. Sir R. Schomburgk, in his 'History of Barbados' (p. 679), gives a list of ten species of Lizards as occurring in Barbados; he simply enumerates a certain number of species, without giving any particulars. I am afraid that little or no reliance is to be placed upon this formal catalogue.

The little Tree-frog, *Hyloides martinicensis*, Tschudi, is undoubtedly a very recent introduction; twenty years ago, as I am credibly informed, it was quite unknown. It is now spread over the entire island, and until the ear gets accustomed or deadened to it, the monotonous incessant chirping of this Frog throughout the night, during rainy weather, is enough to drive a person distracted. This Frog is found in Martinique, St. Kitts, Saba, Dominica, and Porto Rico, and doubtless in many others of the islands. Its transport to Barbados, along with plants, or by the direct agency of man, was to be expected.

There can be no question that the Toad in Barbados, *Bufo marinus*, L., vel *B. aqua*, Daud., is an importation of recent years. Schomburgk, writing in 1848, notes:—"I have been assured that this species, which is so common in Demerara, was introduced from thence about fifteen years ago. It has increased most rapidly, and is now to be met with in as large numbers as in Demerara." There is certainly no falling off in the stock at the present time, as this Toad is ubiquitous throughout the island and countless. It is found in the islands of Grenada, St. Lucia, St. Kitts, Martinique, Montserrat, Jamaica, and Nevis, into all of which islands it has probably been introduced either by accident or on purpose, for it is said to be an exterminator of mice and to keep off rats.

I have already recorded in this magazine (1888, p. 236) the interesting fact of an Alligator being transported alive on the trunk of a tree from the continent of South America to Barbados in 1886. I do not refer to the marine reptiles which frequent the shores of Barbados, because their visits do not possess the same zoo-geographical interest as the question of the introduction of the terrestrial ones.

THE MANATEE AT THE ZOOLOGICAL GARDENS.

BY PROCTER S. HUTCHINSON, M.R.C.S.

ONE of the recent acquisitions of the Zoological Society is the curious Manatee. This animal, which comes from Demerara, may be seen in a warm-water tank in the Reptile House of the Gardens. It is the South-American species, *Manatus americanus*, of which one specimen has been in the Gardens before, but unfortunately died in about a month, probably from the water being insufficiently warmed.

The Manatees belong to the Order Sirenia, or Sea-Cows; besides this species there are two others, the Floridan, *M. latirostris*, and the African, *M. senegalensis*. The Halicore, or Dugong, having tusk-like incisors and no nails on the flippers, and Steller's Sea-Cow, *Rhytina Stelleri*, entirely without teeth, belong to other genera of the same Order: the latter animal, which inhabited Behring's Straits up to the end of the last century, but is now believed to be extinct, was twice as large as a Dugong or Manatee, but of similar habits.

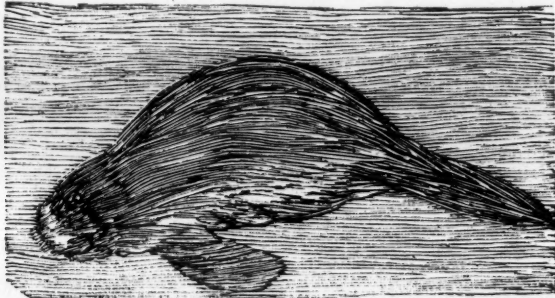
The Manatee, like the Whale, is not, as many erroneously suppose, a fish, but a mammal, suckling its young and having warm blood. It agrees with whales in the absence of mid-limbs and the possession of a horizontal tail-fin, but differs in the conformation of its nostrils, which are never used as blow-holes, though they can be opened and closed at will by means of a valve. We might apply to it what Trinculo says of Caliban:—

“What have we here? a man or a fish? . . . Warm, o' my troth! I do now let loose my opinion; hold it no longer. This is no fish, but an islander.”

It has a rounded head, very small eyes, no external ears, a pair of anterior flippers, which it can move in all directions, with small nails on them; no hind limbs, and a broad flat tail, horizontal, not vertical like fishes. The lips are covered with stiff bristles, but the skin is thick and almost hairless. There are several skeletons of Manatees both in the College of Surgeons and the British Museum, and at the latter place a fine skeleton for comparison of *Rhytina*. From these it will be seen that their bones are very thick, and that they have the great peculiarity of only six cervical vertebræ instead of seven, a feature only

present in one other mammal, namely, Hoffmann's Sloth: this does not apply to the Dugongs or to *Rhytina*.

It was noticed that the Manatee formerly in the Zoological Gardens was unable to move when its tank was dry, from which it may be inferred that its habits are entirely aquatic, and that it cannot progress upon land. It inhabits the shores and rivers of Eastern South America and Western Africa, feeding exclusively on water-weeds. The animal now in the Gardens is fed on lettuces. In its motion through the water there are none of the lateral movements characteristic of Seals; the flexions of the body are vertical. It puts the tips of its flippers into its mouth somewhat like a cat licking its paws.



The Manatee is said to have been trained to come to a call, for though having no external ears there is a small outer opening for the ear, with a drum and ossicles, differing essentially from fish, which have only internal ears and no drum, and not receiving definite sounds. It is hunted by the Indians of South America for food, the flesh being highly prized, and described as resembling pork; it also furnishes a clear oil, which does not become rancid. Above is a sketch of the animal now in the Gardens; it is a young one, and has yet to grow considerably.

It will be noticed that there is no trace of hind limbs externally, and in the skeleton only two small girdle bones represent them. Like the Whale, it has to come to the surface of the water from time to time to breathe; in the tank at the Gardens it comes up every two and half minutes.

The South American Manatee which lived for some time in the Westminster Aquarium was described in 'The Zoologist' of 1878 (p. 285), from which some facts in the above account have been taken. To this the reader may be referred for a description of the very singular mode of feeding in this animal, effected by

the action of lateral lip-pads, the jaws moving horizontally instead of vertically. This indeed is the most curious point to be noted in the anatomy of the Manatee, and is well worthy of observation by naturalists while the opportunity is still afforded of seeing a living specimen. The annexed figure of the animal's mouth, viewed from the front, was drawn while it was opening its lips to enclose pieces of lettuce.



ON THE SURVIVAL OF *NOTORNIS MANTELLI* IN WESTERN OTAGO.*

BY JAMES PARK, F.G.S.

Up to the present time only three specimens of this remarkable bird have been secured, and, as the opinion has been expressed by some naturalists that it is now quite extinct, I have prepared the following notes, collected during the progress of various explorations in Otago, as tending to show that it not only exists, but is probably as numerous now as when the colony was first settled by Europeans.

I may mention at the outset that the genus *Notornis* was founded by Professor Owen in the year 1848, upon portions of a skull and other parts of the skeleton of a large Rail discovered at Waingongoro by the Hon. Walter Mantell, while exploring at that place for Moa-bones. These fossils are all that now remain to testify the existence of the *Notornis* in the North Island, where it was known to the natives as the Moho.

By a strange, and at the same time most fitting, coincidence, the first two specimens of the *Notornis*, or Takahe as it was called in the South Island, were secured by Mr. Mantell in 1849. The first of these was captured by a party of sealers at Duck Cove, Resolution Island, in Dusky Sound; and the second by the Maoris on Secretary Island, opposite to Deas Cove, in Thompson Sound. Both of these were forwarded to England, and are now in the British Museum in London.

After a lapse of over thirty years the third specimen was

* From the 'Transactions of the New Zealand Institute,' vol. xxi. (May, 1889), pp. 226—230.

captured by a party of rabbiters about the beginning of 1880, on the Maruroa Flat, on the east side of Lake Te Anau. This bird was also sent to England, and at the present time probably adorns the shelf of some foreign museum. Since the above date no fresh example of the *Notornis* has been secured, although much time has been spent in the search around Lake Te Anau.

My first acquaintance with this bird dates back to 1881. During the months of January and February of that year I was engaged, with Mr. A. McKay and Mr. John Buchanan, on a geological and botanical exploration of the Wanaka country. On the 20th of January we struck our camps at the forks of the Matukituki, opposite Mount Aspiring, and proceeded up the south branch of that river to Cascade Creek, a distance of eight or ten miles. Here we pitched our tents, at an altitude of 2000 feet above the sea, in the shelter of the *Fagus* bush which covers all the slopes of the surrounding mountains and the greater portion of the river-flats.

Shortly after dusk our attention was attracted by the call of a strange bird which approached within a few chains of our camp, uttering at short intervals a loud booming note. Now, we were all pretty familiar with the calls of the different birds usually met with in the high lands of Otago, but the call of this bird was quite unlike any of them. We knew also the booming note of the Bittern, which, although like this in kind, was left far behind both in volume and intensity. Besides, this was a high, mountainous, bush-covered country, ill adapted for this bird, which usually frequents raupo-swamps and creek-banks. After some deliberation we arrived at the conclusion that this was the *Notornis*, a determination subsequently borne out by facts which came under my own observation.

The next evening, with Mr. McKay's assistance, I lit a large bright fire in the bush, about four chains from the camp, knowing from experience that birds of nocturnal habits were often attracted by the light of a camp-fire. Retiring a short distance from the fire, we awaited the result. As we anticipated, in less than half an hour our friend of the previous evening approached, uttering his booming note as he walked about. We now crawled towards the fire, making as little noise as possible in passing over the dry twigs and leaves lying upon the ground. When we

drew near, the bird retreated from the opposite side of the fire, and when we withdrew it again approached. This manœuvre was repeated several times without any success on our part; but at the same time it should be mentioned that the bird, by its movements, exhibited no signs of haste or alarm.

On several occasions we were probably within four yards of it, and at these times when it uttered its note we could distinctly feel the ground vibrate beneath us. We, however, failed to catch a glimpse of it, as in the intense darkness of the forest this was quite impossible, excepting it chanced to get between us and the fire, which it carefully avoided doing.

The next day I examined the scene of the previous night's adventures, and found that the clear space below the matted branches of the scrub under which the bird had eluded us was about twenty inches high, thus affording a means of approximately determining its height.

The *Notornis* remained in the vicinity of the camp during our stay at this place, being evidently more curious than alarmed at our presence. He generally sallied forth at dusk and retired at daybreak, his deep note completely dwarfing the cries of the Kiwi and noisy Kakapo.

On the 29th January we struck our tents and returned to our old camping-ground near the forks of the Matukituki. Shortly after dusk of this evening we heard the note of a *Notornis*, and, proceeding up the south branch to the upper end of the gorge, I disturbed the bird under a sand-bank close to the river. On examining this spot I found that it had scraped a shallow hole in the dry sand, after the same manner, and probably for the same purpose, as the common barn-door fowl.

The river-flats at this place, situated about 1700 feet above the sea, are covered with a scanty mixed bush, affording but little cover; the ground, however, is thickly strewn with large masses of rock which have fallen from the steep cliffs on the south side of the river, and below which the *Notornis* no doubt found shelter during the day-time.

The next evening I again proceeded to the upper end of the gorge, where the *Notornis* announced his arrival by his loud note. Knowing where to look for it, I approached the bank as cautiously as possible, but, just as I looked over, it scampered away as fast as it could run.

On this occasion I was fortunate enough to catch a passing view of it, although in the uncertain starlight I could only make out its general outline. It must be remembered that it was only in sight a few seconds; but the impression it left upon my mind at the time was that its colour was very dark, and its height about that of a full-grown Turkey. An important fact to be noted here is that, although I got within a few feet of it, the bird made no attempt to fly, but ran away very swiftly, and without making any sound or cry of alarm. There can be little doubt that with a sharp dog I could easily have caught it; but, unfortunately, we had no dog attached to our camp at this time.

Seven years now elapsed before the *Notornis* again came under my observation. At the beginning of this year I visited Dusky Sound for the purpose of examining the mineral deposits discovered there by Mr. William Docherty, the well-known prospector. On the day after my arrival—the 5th of January—I accompanied Docherty to his pyrrhotine lode on the lower slopes of Mount Hodge, situated about a mile from the beach. Shortly after commencing the steep ascent we heard the deep booming call of a bird, which I at once recognized as similar to that of the strange bird I had heard in the Matukituki Valley in 1881. After listening for a while I expressed my belief that this was the *Notornis*. Docherty, however, stoutly denied this, stating that he had often heard the same sound, which was what he called in his own words “a volcanic noise in the bowels of the earth.” Without stopping to argue the point, I pressed along, hoping to see the bird, which appeared to be somewhere on our path. The ascent at this point was very steep, our track being along the right bank of a precipitous rocky stream. In a few minutes we got so close to the bird that there could be no doubt whatever as to the organic origin, so to speak, of the sound, which seemed to proceed from the crop of the bird. I now told Docherty to keep quiet for a little, and he would soon see the cause of the booming, at which he became very excited, and shouted loudly that nothing would convince him it was not a “volcanic noise.” I need hardly state that we heard nothing more of this bird that day.

On returning to the hut in the evening my field-hand informed me that when he was fishing off the point close by he had heard a Takahe in the bush, in the direction in which I had been

during the day. On asking him what he knew of that bird, he said he was one of the party of rabbiters who caught the Takahe near Lake Te Anau in 1880 ; and, as he had often heard the call of that bird and its mate, which, by the way, was never captured, he was quite sure the booming note which he had heard during the day was that of a Takahe. In view of the determination I had previously arrived at, I considered this evidence conclusive that this was indeed the *Notornis*. I may mention that this was the first occasion on which I heard the *Notornis* spoken of as the Takahe, the only name by which it was known to my field-hand.

That same evening, and every successive evening afterwards during my stay at Dusky Sound, I heard two Takahes in the bush at no great distance from the hut. In the course of my various excursions in this sound I heard the Takahe at the following places, not including those already mentioned :—In the left-hand branch of Docherty's Creek, not far from the open country ; at the north end of Cooper's Island ; in a gully on the southern slopes of Mount Pender, apparently not far from the beach ; and on the south side of the sound, about opposite the upper end of Cooper's Island.

It will be remembered that the first specimen of *Notornis*, secured by Mr. Mantell, was captured at Duck Cove, Resolution Island, a distance of some seven miles from Cooper's Island ; and the second at Secretary Island, in Thompson's Sound, about thirty miles further up the coast. After a lapse of over thirty years a third specimen was captured in 1880, near Lake Te Anau ; and the following year it was heard in the Upper Matukituki Valley, behind Mount Aspiring, by myself and others of an exploring party ; and now, again, in the beginning of the present year, at Dusky Sound, by myself and others. When passing through Wellington some four months ago Docherty informed the Hon. Mr. Mantell that he had recently seen a *Notornis* at Dusky Sound. He said he came upon it in the bush close to the beach, and that it flew some distance on to the water, and then made back to the shore.

I think I have said enough to show that the *Notornis* still exists in the lonely sounds and mountain-recesses of Western Otago, in places far removed from the ordinary haunts of men. That it is gradually becoming extinct is no doubt quite true, but, whatever the cause, it can hardly be said to be on account of the

inroads of man. Its extinction is, possibly, partly due to scarcity of food, and partly to a process of natural decay which is no doubt in a measure induced by the effects of the first.

So recluse and retiring in its habits, it is probable that few if any further additions will be made to the three specimens of this bird already secured, unless special efforts be made in this direction; and, though this may entail a considerable expenditure of time and energy, the object is one deserving the support of every true naturalist.

NOTES AND QUERIES.

The late Surgeon Francis Day, C.I.E., F.L.S., F.Z.S. — On the 10th July, at Cheltenham, after a long and painful illness, there passed away a naturalist who has long been known as a leading authority in this country on all that relates to fish and fish-culture. To our readers doubtless Dr. Day's name will be chiefly familiar in connection with the latest work on British Fishes which he published in parts between 1880 and 1884, and his volume on British *Salmonidæ*, which appeared only two years ago (1887), to say nothing of the many papers which he contributed to the 'Proceedings of the Zoological Society,' 'Journal of the Linnean Society,' 'The Zoologist,' 'The Field,' and 'Land and Water,' as well as to the 'Transactions of the Cotswold Naturalists' Field Club and Cheltenham Natural Science Society,' of which he was President at the time of his decease. But it was as an authority on the Fishes of India, Burma, and Malabar that he first made his mark, and acquired a reputation which on his retirement from the Madras Army as Deputy Surgeon-General, led to his appointment as Inspector-General of Fisheries for India, a post which he held until 1877, and which gave rise to the publication of many valuable Reports. His standard work on the Fishes of Malabar appeared in quarto in 1865, although two years previously he had published his first book, which he called 'The Land of the Permauls; or Cochin, its past and its present.' It was not until 1878 that he was able to complete his great work on the Fishes of India, the publication of which had been commenced in 1875. This important work did for ichthyologists what Jerdon's 'Birds of India,' to some extent, did for ornithologists. It gave them a comprehensive view of the Fish Fauna of India, Burma and Ceylon, and supplied a vast amount of information on many species which were either previously undescribed or very imperfectly known. As a contribution to zoological science, however, it is much superior to Jerdon's work. The species are more skilfully diagnosed, the synonymy properly worked out,

and—most important of all—a large number of the species described are accurately figured. Beautiful as many of the drawings are, and carefully lithographed by Mintern Brothers, whose work in this respect it would be difficult to excel, it is to be regretted that the Government of India did not afford that financial support which would have admitted of the plates being coloured. This indeed would have been a boon, for everyone knows how gorgeous are the hues of tropical fishes, and how very evanescent these colours are. But we have much to be thankful for in the work as it stands, with the Supplement to it which appeared only last year.* Still more reason have we to be grateful that the author's life was spared long enough to enable him to furnish Dr. Blanford, as editor of the new 'Fauna of British India,' with the MS. of two volumes on the Fishes, one of which has just been published, in which we shall happily find the latest views of the most competent authority on Indian Ichthyology. During the last few years of his life much of his time was spent at Howietown with Sir James R. G. Maitland, whose successful efforts there to establish a fish-farm and school for fish-culture were considerably aided, we may assume, by the knowledge and practical advice which Dr. Day was well able to bestow, until failing health caused him to return to his home at Cheltenham. Foreseeing that the end was near, Dr. Day resigned himself with calmness to the inevitable, and with that liberality which always characterized him through life, he made valuable presents of books from his library (including bound volumes of his collected papers) to the Linnean and Zoological Societies, of which he was a Fellow, and a series of fishes from his large collections to the Natural History Museum, in furtherance of the science which he had made a lifelong hobby. His death will be a loss not only to ichthyologists in all parts of the world with whom he was in correspondence, but to many a poor fisherman in this country in whom he took interest, and to whom when occasion offered, he delighted to do "a good turn." A certain brusqueness of manner sometimes caused him to be misunderstood by those who did not know him well, and a warm temperament led to his resenting such misunderstandings, instead of trying, as others might have done, to remove them. Nevertheless, beneath this brusque exterior there was a kind heart and a genuineness of purpose which one could not but admire. If his teaching, ichthyologically speaking, was not always couched in the clearest language, at least one felt sure that his statements might be relied upon, so anxiously did he strive to be accurate in what he wrote. His acquaintance with the literature of his subject, combined with long practical experience, enabled him not only to correct the mistakes of other authors, but to make very important additions to the Natural History of

* We understand that the entire stock of this work, with the Supplement, is now in the hands of Mr. Wheldon, 58, Great Queen Street.

Fishes, both indigenous and exotic, supplying information when it was most needed in volumes which must for a long time to come remain standard works of reference.

MAMMALIA.

Distribution of Daubenton's Bat in Britain.—To the summary of records of this species given in 'The Zoologist' for May last (pp. 161, 162), one or two other instances of its occurrence might be added, so that this volume may contain about as much as is known on the subject. There is a specimen from Devonshire in the British Museum (*vide* Dobson's Catalogue of the *Chiroptera*). It doubtless occurs on the Isis between Oxfordshire and Berkshire, for in some notes by the late Mr. H. Norton in the 'Midland Naturalist' for 1883, the Whiskered Bat is described as flying low over the water there in large numbers—a description which can only apply to this species, the author being well acquainted with the *Pipistrelle* and *Noctule*. Mr. W. Jeffery, of Ratham, has shown me a specimen of this bat which was taken in Surrey, and there is perhaps no harm in referring to records so recent as those for Leicestershire (Zool. 1885, p. 216), Lincolnshire (Zool. 1887, p. 143), and Merioneth (*tom. cit.* p. 346). I have a specimen taken at Hereford last year. Garner records it for Staffordshire, Sir Oswald Mosley for Derbyshire (Nat. Hist. Tutbury), and Mr. Jenkinson for Worcestershire (Zool. 1857, p. 5661). Lastly, in 'Science Gossip' for 1885, is an account of a specimen taken in Renfrewshire, which devoured tinned fish in captivity.—J. E. KELSALL (Fareham, Hants).

Distribution of Natterer's Bat in Britain.—It may be convenient to collect here some records of this bat which were overlooked in the preparation of the list given in the last number of 'The Zoologist' (pp. 242—248). Its occurrence in Devonshire was noted in 'The Field' for 1874 in Mr. Newman's "Collected Observations on British Bats," and at Sawtry, in Huntingdonshire, in 'The Zoologist' for 1843. The specimen procured at Godstow (Berks), referred to on p. 246, is in the Oxford University Museum, and was formerly labelled as *V. Bechsteinii* (Zool. 1884, p. 483). This mistake was excusable on the part of its captor, the late Mr. H. Norton (who was not book-learned on the subject, though a keen observer), for he would have found the rarer species described in Bell's 'British Quadrupeds,' and its characteristics are mostly those of *V. Nattereri* somewhat exaggerated. The same observer should have the credit of finding Natterer's Bat at Begbroke Church, Oxfordshire. He described it under some fantastic name as occurring there, and there is a drawing of it in his MS. notes, which were kindly shown to me by Mr. A. H. Macpherson, and are now in the hands of Prof. Westwood, of Oxford. I visited this church on May 28th, 1885, and found a specimen of Natterer's Bat dead in the belfry, and heard others squeaking in a hole out of reach. He wrote that they "issued from

the church and spread themselves into the adjoining trees," and that they were so delicate as generally to be killed by the stroke of his butterfly-net, so that he only procured one alive; but perhaps these were only the young. Mr. F. Bond has written me word of its occurrence in Gloucestershire. The Kildare (Tankardstown) record is a mistake; see Dublin Nat. Hist. Review, vol. vi. 1859. The bats taken there proved to be *V. Daubentonii*, which (as the Editor remarks on p. 162) is our most aquatic species, not the *Barbastelle* (p. 242, note).—J. E. KELSALL (Fareham, Hants).

[Mr. Kelsall is right. For "*Barbastelle*" (p. 242, note), read "*Daubenton's Bat*," whose aquatic habits were commented on in the article on the latter species (pp. 162, 163). When noticing the occurrence of Natterer's Bat in Hampshire (p. 246) we unintentionally omitted to state that Mr. Edward Hart had found it to be not uncommon at Christchurch, whence some months ago he was good enough to forward a living example, from which Mr. Lodge's figure of the species was drawn for our last number (Pl. III). Mr. H. A. Macpherson reminds us that Cumberland need not have been omitted from the list of counties in which this bat has been found, inasmuch as its occurrence there has been recorded by him in the 'Transactions of the Cumberland and Westmoreland Nat. Hist. Assoc.' for 1887 (p. 43). It is there stated that early in August, 1886, a colony of Natterer's Bat was discovered by Mr. A. Smith in an outhouse at the Gasworks at Castletown, a few miles from Carlisle, whence three living specimens were forwarded to Mr. Macpherson, one of which escaping in a room afforded him an opportunity of making some observations on its powers of flight, which he described as graceful and buoyant. Mr. Duckworth afterwards saw one which had strayed into a room at Castletown, and was probably one of those previously evicted from the outhouse already referred to, whence others were subsequently procured.—ED.]

BIRDS.

Stock Dove nesting in Co. Antrim.—On April 30th last I discovered the nest of a Wild Pigeon in a secluded part of Lord Massereene's demesne not very far from the town of Antrim. The nest, which consisted of a few twigs, and fronds of the oak polypod fern, was placed on the earth in a hole in the fringe of a water-worn bank. It contained two fresh eggs, much smaller and more oval in shape than the eggs of the Ring Dove, *Columba palumbus*. I concluded they were the eggs of the Stock Dove, *C. ænas*, and, as this bird is of very rare occurrence in Ireland, I drew attention to the matter in one of our local papers. In reply I received a letter from Mr. R. Lloyd Patterson, Secretary of the Belfast Naturalists' Field Club, suggesting that I should forward the eggs for identification to London. This was accordingly done, and one of the eggs in question was, I understand, submitted by him to you and to Mr. Grant, of the Natural History

Museum, with the result that both referees expressed themselves satisfied that it was an undoubted egg of the Stock Dove.—J. GORDON HOLMES (Vicar of Antrim).

[The egg referred to was forwarded by Mr. R. Lloyd Patterson, and from its size and shape, as well as from the description of the nesting-place, we have no doubt it was that of a Stock Dove. This is not the first time that this bird has been ascertained to breed in Ireland. The late Lord Clermont found a pair nesting in a crevice of a rocky hillside between Louth and Armagh, and it has also been found breeding in the Co. Down. See 'Zoologist,' 1877, p. 383.—ED.]

The Extinct Starling of Reunion (*Fregilupus varius*).—Time alone can prove whether we are right in calling the *Fregilupus* an extinct species, for many people have imagined that the bird still exists in the interior forests of the Island of Réunion; but as year after year passes by, and no specimens are discovered, we fear that we must class the Starling of Réunion, along with the Dodo and other birds of the Mascarene Islands, as having been exterminated by the hand of man. The earliest mention of the *Fregilupus* is believed to be that of Flacourt, who, in an account of a voyage to Madagascar, speaks of a bird called the "Tivouch," found in Madagascar, Bourbon, and the Cape, and described as being "black and grey, with a fine crest." The species was for a long time supposed to inhabit the Cape, and Montbeillard calls it the "Huppe noire et blanche du Cap de Bonne Espérance." Its crested head and curved bill were evidently the cause of the bird being called a Hoopoe, as was done by most of the older writers, until Levaillant in 1806 put it down as a *Merops* or Bee-eater. The latter author knew of eight specimens at least, two in the Paris Museum, one in the possession of each of the following persons,—MM. Gigot Dorey, Mauduit, l'Abbé Aubry, M. Poissonier, one in the collection of M. Raye at Amsterdam, and one in Levaillant's own collection. The fate of most of these specimens is unknown at the present day; they have doubtless decayed or been destroyed, as the mode of preservation of animals at the beginning of the century was by no means perfect. In 1833 a very fine specimen was sent by Mr. Nivoy to the Paris Museum, where lately we saw it, along with a more ancient individual, doubtless one of the two known to Levaillant. The same Museum also possesses two specimens in spirit. The only representative of the genus *Fregilupus* in this country has hitherto been a skeleton in Prof. Newton's possession. This individual was shot in 1833 by the late Jules Verreaux, who gave it to Prof. Newton. We are happy to announce, however, that the Trustees of the British Museum have recently acquired a very fine example of this extinct Starling, one too which, curiously enough, was not known to Dr. Hartlaub when he gave in 1877 the list of specimens supposed to exist in Museums. The bird now in the Natural History

Museum has been acquired from the well-known Riocour collection at Vitry-la-Ville. This famous collection, the work of three generations of the Counts de Riocour, consisted of a series of excellently mounted specimens, forming a choice little Museum which it would be hard to excel. The grandfather of the present Count was the founder of the collection, and was an intimate friend of Vieillot and the old French naturalists at the beginning of the century. Nearly all the specimens of that age are named by Vieillot, several of whose types are in the Riocour collection; and Dr. Günther has been successful in securing these also for the cabinets of the British Museum. A more interesting link with the past than this collection of the Counts de Riocour can scarcely be imagined, and we are glad to know that in the hands of Mr. Boucard, who is now the owner of the collection, it will receive the kindly consideration which such a famous Museum deserves. Writing in 1877, Dr. Hartlaub, in his 'Vogel von Madagascar's,' gives a list of the specimens of *Fregilupus* known to him, as follows:—Four in the Paris Museum (two stuffed and two in spirits); one in the Caen Museum; one at Leyden (old and bad); one in the Stockholm Museum: one in the Museum at Florence; one in the Pisa Museum; one in the Genoa Museum; one in the Turin Museum; and one in the collection of Baron de Selys-Longchamps. Sir Edward Newton likewise knew of two specimens in the Museum at Port Louis in Mauritius, and there is also the skeleton in Prof. Newton's possession; so that, with the one recently added to the British Museum, there are probably sixteen specimens in existence. The Italian Museums received their specimens from the same source, viz., from Prof. Savi at Pisa: and some of those in other Museums are from the same source. Count Salvadori has published a very interesting article on the *Fregilupus*, in which he informs us that Savi received several specimens from a Corsican priest named Lombardi, and that these specimens were given away by Savi in the most generous spirit, as he appears to have retained only a single specimen for the Pisa Museum. Like other insular forms, the *Fregilupus* seems to have courted extermination by its very tameness and ignorance of danger. The late Mr. Pollen stated, in 1868, that the species had become so rare in Réunion that when he visited the island not one had been heard of for ten years, though it was still believed to survive in the forests of the interior. The old people who remembered when the birds were still common told him that they were so stupid and fearless that they could easily be knocked down with sticks. The extinct *Necropsar rodericanus*, Sclater, was the representative of *Fregilupus* in Rodriguez (cf. Günther and E. Newton, Phil. Trans., vol. clxviii. p. 427), and its nearest living ally of the *Fregilupus* is probably *Falculia* of Madagascar, but there is also considerable affinity to *Basileornis* of Celebes and Ceram. An excellent account of the osteology of the genus was given by Dr. Murie in the

'Proceedings of the Zoological Society' for 1873.—R. BOWDLER SHARPE (in 'Nature').

Thrush's Nests without the usual Lining.—On April 7th last I found two nests of the Song Thrush, both containing eggs, and neither of them having any of the usual lining of rotten wood or mud. They were exactly like the nest of the Blackbird. Some years ago I found a similar nest of the Thrush. The only mention I can find of such nests is in 'The Zoologist' for 1887 (p. 268), where Mr. Whitaker records having found three similar nests.—E. W. H. BLAGG (Cheadle, Staffordshire).

Jackdaws nesting on open Boughs.—Mr. Blagg's query (p. 231) as to whether Jackdaws actually build their nests on open boughs, is one which I have for a long time been puzzled with. When on a visit in Leicestershire, in 1882, I was surprised to see that two or three pairs of Jackdaws had taken possession of some nests in the middle of a small rookery, and I was unable to decide whether these nests had been built by the Jackdaws or only appropriated by them. I hardly think they will independently build their nests on open tree-boughs [but see editorial note, p. 231.—ED.], and in the case just cited I came to the conclusion that the scarcity of their favourite nesting-resorts was the cause. If I mistake not Mr. Blagg's country is rather hilly.—C. E. STOTT (Lostock, Bolton).

Stone Curlew breeding in Notts.—I am glad to say that there have been two pairs of these birds nesting this summer within a few fields of my house; and though one nest was accidentally destroyed by the plough, I feel sure the other pair got safely off with their young.—J. WHITAKER (Rainworth, Notts).

Little Bittern in Sussex.—A female specimen of *Ardetta minuta* was brought to Mr. Bristow, taxidermist at St. Leonard's-on-Sea, for preservation, about the second week in May. It was shot near the Lifeboat House, in the Guildford Level, near Rye Harbour. Mr. Dresser, in his 'Birds of Europe,' makes no mention of its ever having been obtained in Sussex; but Yarrell (4th edition) includes this county amongst others in which it has been met with.—THOMAS PARKIN (Fairseat, High Wickham, Hastings).

Goldeneyes at Rainworth, Notts.—One Sunday, in February last, on looking out of my window, I was delighted to see, within twenty yards of the house, a pair of Goldeneyes on the water here. I had the pleasure of watching them for more than half an hour, during which time they were constantly diving, and seemed by their actions to be obtaining plenty of food. On going out a short time afterwards, they rose and flew away to the west. From what I could see they were both in immature plumage.—J. WHITAKER (Rainworth, Notts).

Nesting of the Lesser Black-backed Gull.—Owing to absence from England I have only recently read Mr. Willis Bund's article (p. 131) on

"A Nesting-place of *Larus fuscus*." Last year I visited the breeding-quarters of the Lesser Black-backed Gull at a spot situate on the N.W. coast of England, and very similar in position and character to that described by your correspondent. The place in question is an extensive peat moss, about two miles from the coast, and inhabited by large numbers of Hares, Red Grouse, and a few pairs of Curlews. The Lesser Black-backed Gulls numbered about a hundred pairs; their nests were formed of rough grass, and usually placed under bunches of heather: at the time of my visit, the end of May, they all contained the full complement of three eggs,—brown in ground colour, spotted and streaked with black. Probably owing to their being unmolested, very little variation was observed in their colouring, and in this respect they presented a great difference to the eggs of *Larus fuscus* on the Farne Islands, which show an endless diversity of ground colour and markings. I may add that the moss referred to above, like that mentioned by Mr. Willis Bund, is in the track of tourists, but is strictly preserved, and therefore fairly secure from molestation.—T. H. NELSON (Redcar).

Wood Sandpiper in Suffolk in June.—On June 12th I put up a Wood Sandpiper from a marsh at Aldeburgh, Suffolk, about half a mile from the railway-station. Two days afterwards I saw a flock of five at the same place, and had a good view of them through a glass. Having in former years shot this bird several times at Aldeburgh, I recognized the note and appearance on the wing at once.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Scops Owl in Co. Wexford.—A specimen of the Scops Owl, *Scops giu*, was obtained at Foulk's Mills, Co. Wexford, on May 31st last, by Mr. F. R. Leigh, who has presented it to the Irish collection in the Science and Art Museum, Dublin.—EDWARD WILLIAMS (2, Dame St., Dublin).

Plumage of the Crossbill.—I am surprised to hear that the Curator of the Newcastle Museum still pins his faith to the obsolete heresy that the adult dress of *Loxia curvirostra* is of necessity a yellow dress. My own views on the subject may be right or wrong; but they were formed after an examination of a number of specimens, at a time when I was specially studying the *Fringillidæ*. At that time I referred to every authority I could lay hands on; and nothing pleased me better than a paper contributed to 'The Intellectual Observer' by the late Mr. Wheelwright, whose long residence in Sweden and Lapland had enabled him to acquire a large series of skins of this species. But Mr. Howse has only to refer to the second volume of the fourth edition of Yarrell (p. 202) to find that Prof. Newton, with every desire to give due weight to Mr. Hancock's opinion, has there stated that the view that the yellow dress is the normally adult dress of the Common Crossbill must be set aside as "a

misconception." Mr. Seebohm approaches the subject with an obvious desire to weigh all opinions; but all that he can say in favour of Mr. Howse's heresy is this, which I admit, that "yellow males occasionally occur in a wild state, and are possibly old and barren birds" ('British Birds,' vol. ii., p. 36). I quote these opinions chiefly to justify myself in the eyes of your readers. Mr. Howse is hardly accurate in describing the nestling plumage of *Loxia curvirostra* as "spotted." I have had living nestlings in my possession, and the skins of others lie now before me; in these the lower parts are streaked or striated, but not "spotted."—H. A. MACPHERSON (Carlisle).

Montagu's Harrier in Suffolk.—About the middle of June last an adult female Montagu's Harrier, *Circus cineraceus*, was shot by a keeper at Risby, near Bury St. Edmunds. It had been noticed about the place for some time. Mr. Travis, who showed me the bird soon after he had mounted it, told me that the ovary contained well-developed eggs.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Hybrid between Sheldrake and Wild Duck.—Mr. Gurney's note on hybrids between the Sheldrake and Mallard is hardly complete without a reference to a passage in Thompson's 'Natural History of Ireland,' where similar facts are narrated. That author refers (vol. iii., p. 70) to a male of the Common Sheldrake kept "at the Falls near Belfast," which paired with a female Common Duck for two or three successive years, producing a handsome progeny. Thompson appears to have been the first British ornithologist to record this cross; the late Mr. R. Gray was the first Scottish ornithologist to do the same, and it was in 1867 that he examined the North Uist birds mentioned by Mr. Gurney, though he only recorded the fact in the 'Birds of the West of Scotland' in 1871. I remember having some conversation with Mr. Gray about the facts, which I also enquired into, for my own benefit, of Mr. Mackenzie, who knew something of them. Sheldrakes are often domesticated in the North of England, but I have never yet come across the hybrid of these two species myself, and there can be no doubt of its extreme rarity.—H. A. MACPHERSON (Carlisle).

Abnormal Eggs of Grey Wagtail and Blackbird.—Having noticed Mr. Blagg's description (p. 231) of eggs believed to belong to the Grey Wagtail, I send for your inspection two clutches of six eggs each, taken by me on May 18th, 1888 (a second clutch), and on April 4th, 1889, respectively. In each case I saw the Grey Wagtail leave the nest myself. No other Wagtails frequent my stable-yard and offices where this bird breeds. I have taken two clutches, of six eggs each, from this bird for two years,—that is, twenty-four eggs,—all similarly coloured, and she has hatched and reared (or is now rearing) a third clutch of eggs similarly

coloured. The Grey Wagtail breeds commonly in Ireland, in some places more commonly than the Pied, but seldom lays more than five eggs, and I have never known one lay eggs of this type of colouring before. [The peculiarity of these eggs consists in their being more heavily marked than usual, with a greater confluence of colour towards the larger end.—ED.] I also send for your inspection and observation four Blackbirds' eggs, samples of four clutches of three eggs each, taken from the same neighbourhood, and those taken this season from the same gentleman's demesne near Cappoquin. They were taken respectively April 10th, 1885; April 26th, 1889; May 4th, 1889; and May 20th, 1889. Of these the first two clutches were taken before incubation had commenced, but the last two were partly incubated. I saw the Blackbird sitting on the third clutch (three eggs only being then laid) on April 28th, though it was not taken until May 4th, so that it could not have been laid by the same bird which produced the clutch of April 26th. These facts show that in the locality where these eggs were found there is more than one Blackbird, and has been one at least, since 1885, which lays clutches of three eggs like those forwarded, and which are almost or altogether devoid of green ground-colour.—R. J. USSHER (Cappagh, Co. Waterford).

Drumming of the Snipe.—On June 15th, when ascending Ettrick Pen, in Selkirkshire, I had a good opportunity of observing the actions of a Snipe while "drumming," and should like to draw the attention of the readers of 'The Zoologist' to the appearance of the tail as distinctly seen through a pair of powerful binoculars. I do not know that I can better describe the general appearance of the tail than by saying that it resembled a fan about three-fourths expanded, with the outermost ray on each side detached along its entire length from the succeeding one, and pulled well away from it, so as to leave a considerable space between their opposing edges. It is to the outstanding position of these outer rectrices that I wish particularly to call attention. The fan-like expansion of the tail has often been pointed out, but I cannot find that anyone has noticed the existence of a clear space between the outermost feathers and those next them; indeed Mr. Hancock ('Catalogue of the Birds of Northumberland and Durham,' p. 107) takes it for granted the latter will overlap the former, and uses the assumption as an argument against the "tail" theory of the sound. It is of course possible, but I think highly improbable, that the bird I saw had lost the second feather on each side of the tail. If further observation should show that the appearance I have described is always present during the "drumming" of the Snipe, the fact may possibly help to throw some light on the vexed question, the mode in which the sound is produced.—WILLIAM EVANS (18 A, Morningside Park, Edinburgh).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

June 20, 1889.—MR. CARRUTHERS, F.R.S., President, in the chair.

Messrs. A. Denny, R. Miller Christy, and John Fraser were elected Fellows.

Dr. H. Trimen exhibited specimens and drawings of the Tuberculated Lime of Ceylon, and made some interesting remarks thereon.

Governor Moloney, C.M.G., of the colony of Lagos, West Africa, exhibited an extensive collection of butterflies and moths, the result of twelve months' collecting during the rainy season; the former comprising representatives of 65 genera and 158 species; the latter, 78 genera and 112 species, had been named and arranged by Mr. Herbert Druce. A few Chelonians belonging to the genera *Trinonyx*, *Sternotherus*, and *Cinixys*, were also exhibited, and a remarkably large block of resinous gum, which, in the opinion of Prof. Oliver, was referable to some species of *Daniellia*, and which had been found in Ijo country. As an article of commerce, it possessed the advantage of requiring a heat of 600° F. to "run" it, so as to unite with linseed oil in the manufacture of varnish. In addition to these specimens, Governor Moloney exhibited some long-bows and cross-bows obtained from chiefs of Ibadan from some battle-field in that neighbourhood, and used by natives 300 miles from the coast-line. A discussion followed, in which Dr. Anderson, Mr. D. Morris, and Mr. Harting took part.

Prof. Stewart next exhibited some skulls, adult and immature, of *Ornithorhynchus paradoxus*, and explained the very curious dentition of this animal, upon which Dr. Mivart and Prof. Howes made some critical remarks.

A paper was then read by Dr. John Anderson, F.R.S., on the Mammals, Reptiles, and Batrachians which he had collected in the Mergui Archipelago, and concerning which he had been enabled to make some interesting field-notes. Attention was particularly directed to a new Bat (*Emballonura*), and to the occurrence on some of the islands of *Pteropus edulis*, besides a Wild Pig, Musk-deer, Grey Squirrel, and a Crab-eating Monkey (*Semnopithecus*) which hunts along the shore in search of crustacea and mollusca. Some remarks were made on Rhinoceros going out to sea, and on a Crocodile being found twenty miles off the coast.

A communication was read from Mr. Charles Packe on a remarkable case of prolonged vitality in a Fritillary bulb.

The meeting (the last of the session) was brought to a close by a most interesting demonstration on "animal locomotion" by Mr. E. Muybridge,

who illustrated his remarks with projections on the screen—by oxy-hydrogen light—of instantaneous photographs taken by him, to which motion was imparted by means of the zoo-praxiscopes.

ENTOMOLOGICAL SOCIETY OF LONDON.

July 3, 1889.—The Right Hon. Lord WALSLINGHAM, M.A., F.R.S., President, in the chair.

The Rev. W. A. Hamilton (Calcutta), and Mr. H. W. Vivian (Glenafon, Taiback, South Wales), were elected Fellows of the Society.

A letter was read from Mr. E. J. Atkinson, Chairman of the Trustees of the Indian Museum, Calcutta, in which assistance was asked from British entomologists in working out various orders of Indian insects.

The following motion, which had previously been unanimously passed at the meeting of the Council, was read to the Society:—"That papers containing descriptions of isolated species widely remote in classification or distribution, are, as a rule, undesirable for publication, as tending to create unnecessary difficulties for faunistic or monographic workers." Mr. M'Lachlan, Mr. Jacoby, Mr. Elwes, Dr. Sharp and others took part in the discussion which followed.

Mr. J. W. Slater exhibited a doubtful specimen of *Arctia mendica*, L., which appeared as if it might prove to be a hybrid between that species and *A. lubricipeda*, L.

Mr. M'Lachlan, on behalf of Prof. Klapálek, of Prague, who was present as a visitor, exhibited preparations representing the life-history of *Agriotypus armatus*, Walk., showing the curious appendages of the case. Prof. Klapálek, in answer to questions, described the transformations in detail. A discussion followed, in which Mr. M'Lachlan and Lord Walsingham took part.

Mr. H. J. Elwes exhibited a specimen of an undescribed *Chrysophanus*, taken in the Shan States, Upper Burmah, by Dr. Manders, which was very remarkable on account of the low elevation and latitude at which it was found; its only very near ally appeared to be *Polyommatus Li*, Oberthur, from Western Szechuen, but there was no species of the genus known in the Eastern Himalayas or anywhere in the Eastern tropics.

Mr. G. T. Porritt exhibited a remarkable series of *Arctia mendica*, L., bred from a small batch of eggs found on the same ground at Grimescar, Huddersfield, as the batch from which the series he had previously exhibited before the Society was bred. This year he had bred forty-five specimens, none of which were of the ordinary form of the species: as in the former case, the eggs were found perfectly wild, and the result this year was even more surprising than before.

Mr. R. W. Lloyd exhibited specimens of *Harpalus cupreus*, Steph., and *Cathormiocerus socius*, Boh., recently taken at Sandown, Isle of Wight.

Mr. O. E. Janson exhibited a fine male example of *Theodosia howitti*, Castelnau, a genus of *Cetoniidæ* resembling some of the *Dynastidæ* in the remarkable armature of the head and thorax. The specimen had recently been received from N.W. Borneo.

Mr. W. White exhibited specimens of *Heterogynis paradoxa*, Ramb., and stated that this insect represented an extreme case of degeneration, the mature female being only slightly more developed than the larva, the prolegs being quite atrophied. Lord Walsingham made some remarks on the subject.

Mr. W. Warren exhibited bred specimens of *Tortrix piceana*, L.

Mr. T. R. Billups exhibited a fine series of the very rare British beetle, *Medon (Lithocharis) piceus*, Kr., taken from a heap of weeds and vegetable refuse in the neighbourhood of Lewisham on May 19th; and specimens of *Actobius signaticornis*, Rey, and *A. villosulus*, Steph., taken in company with the above. Mr. Billups also exhibited specimens of *Eulophus damicornis*, Kirby, belonging to the *Chalcididæ*, bred from pupæ found by Mr. Adkin attached to the leaves of lime-trees at Oxshot, Surrey, but the host was unknown.

Mr. W. F. Kirby read a paper entitled "Descriptions of new species of *Scoliides* in the collection of the British Museum, with occasional reference to species already known."

Mr. J. B. Bridgman communicated a paper entitled "Further additions to the Rev. T. A. Marshall's Catalogue of British Ichneumonidæ."

Mr. J. S. Baly communicated a paper "On new species of *Diabrotica* from South America."—W. W. FOWLER, *Hon. Sec.*

NOTICES OF NEW BOOKS.

A Monograph of the Weaver Birds (Ploceidæ) and Arboreal and Terrestrial Finches (Fringillidæ). By EDWARD BARTLETT, Curator of the Maidstone Museum. Parts I.—III., 4to. Published by the Author. 1888—89.

FOLLOWING the example of several modern ornithologists who have issued expensively illustrated volumes on special groups of birds, Mr. Edward Bartlett has commenced the publication of a Monograph with the title given above. Three parts are now before us, and bear evidence of considerable labour and painstaking compilation on the part of the author.

The plan of the work is to give, as far as possible, after the English and scientific names of each species a very full synonymy, with a reference to notable figures, followed by the French, German, and native names by which the bird is known in its real home, and a list of localities where it has been met with. This is followed by a description of the male, female, and young (if known), and an account, so far as can be given, of its habits, nidification, and distribution. The number of pages devoted to each species varies according to its rarity or otherwise, and extends from two to four or five pages, accompanied by a coloured plate, drawn and lithographed by Mr. Frohawk.

It has become the fashion of late years in monographs of this kind to work out the synonymy to an extent that is perfectly appalling, and in our judgment wholly unnecessary. In the case of a bird which is comparatively little known, or concerning which little has been previously published, it is doubtless convenient to give references to those authors who have written upon it, but in the case of such well-known species as the Java Sparrow, the Virginian Cardinal, and the common House Sparrow, it seems to us preposterous to print three or four quarto pages of synonymy, including references to the most ordinary text-books with which every ornithologist should be familiar, and to trifling allusions in papers of no particular value. Pages thus filled are quite unreadable, and, considering the cost of printing, would be more useful if devoted to other and more important points in the bird's history. As they stand, they are of no great use to scientists who know where to look for such information if required, and cannot be of interest to the general reader. When we say that the synonymy in this case is overdone, we indicate what appears to us to be a fault in Mr. Bartlett's work, though doubtless this, after all, is a matter of opinion. In other respects, the author is to be congratulated upon the way in which he has brought together such information as he has been able to collect concerning the life-history of every species of Finch and Weaver-bird included in his Monograph.

From a study of the localities in which the Virginian Cardinal has been obtained, Mr. Bartlett finds that the distribution from north to south, and east to west, covers about 3,698,000, or nearly 4,000,000 square miles; in this area the bird becomes very variable in size and colour, the more southern forms being the

smaller and richer coloured, while the northern is larger and paler. Mr. Robert Ridgway has remarked that this difference between the two geographical races is most obvious in the females, adding that this is the case with all the climatic or local forms into which the species is "split up."

The account furnished by Mr. Hubert D. Astley of the breeding of a pair of these birds in a state of liberty in England is very interesting. Briefly stated, it appears that they escaped from a large pheasantry, where they had been confined for two years, and soon became acclimatized. They got out on May 15th, and three days later Mr. Astley observed that a nest had been commenced in a very bare yew tree. It was very frail, with no foundation, merely bits of dead grass and some old pieces of rush, lightly interwoven, the whole structure being decidedly small for the size of the bird. Exactly a week after their escape the first egg was laid. It was rather larger than a Sparrow's in size, and dirty white in colour, with large blotches of reddish brown, chiefly at the larger end. Five eggs were laid in as many consecutive days, and four young birds were eventually hatched, the period of incubation being fourteen days.

We have referred to the coloured plates by Mr. Frohawk. Some of these strike us as being somewhat flat, but the later ones are much better, the artist evidently having improved with practice.

In concluding our notice of Mr. Bartlett's Monograph, we would venture to suggest that, considering that most of the species dealt with are favourite cage-birds, some information upon their proper treatment in captivity, with hints as to food, &c., would be particularly acceptable to owners of aviaries, and might result in attracting as subscribers many who, in the absence of such information, would regard the work as deficient from their point of view. Works of this class are naturally costly, owing to their size, and to the number of coloured plates which they contain, but tending as they do to the material advancement of zoological science, we trust that this Monograph, like those which have preceded it, will meet with the cordial support and encouragement which it deserves.





